

Remarks

The Applicants confirm their earlier election of Group IV, including Claims 5 – 8, for immediate prosecution. The Applicants have cancelled all of the claims and added new Claims 11 – 14 that are directed to the subject matter of the originally elected invention.

The Applicants acknowledge the rejection of Claims 5 – 6 and 8 under 35 U.S.C. §103 over the hypothetical combination of Tang and Duggal with Clark. Those rejections are moot in view of the cancellation of Claims 5 – 6 and 8.

In any event, the Applicants respectfully submit that the combination of the secondary references with the primary reference set forth above is inapplicable to the newly added claims for the reasons set forth below.

The Applicants respectfully submit that Clark is not prior art with respect to new Claims 11 and 14. In that regard, the Applicants enclose a verified English translation of the Applicants' Japanese priority document No. 2001-023474, filed January 31, 2001. The Applicants note that the filing date of the Japanese priority document pre-dates the November 26, 2001 filing date of Clark. The Applicants also note that the subject matter of Claims 11 and 14 is fully supported by the Applicants' Japanese priority document. As a consequence, the Applicants respectfully submit that Tang and Duggal cannot be hypothetically combined with Clark inasmuch as Clark is not prior art.

With respect to the patentability of Claim 12, the Applicants note with appreciation the Examiner's helpful comments that a base plate (22) has a plurality of openings (24, 26) and on which the deposition masks are arranged. However, the Applicants respectfully submit that this is not correct. The openings (26) are not openings for arrangement of the deposition masks. It is clear from Clark at Column 3, lines 23 – 26 that around each of the four corners of the frame 22

there are cutout segments 26 and in three of the cutout segments 26, the alignment pins 18 project therethrough (see Fig. 2). The frame 22 has only one central opening 24 on which a plurality of mask segments is arranged. The frame 22 does not have a plurality of openings on each of which each of a plurality of deposition masks is arranged.

In sharp contrast, in Claim 12, the base plate, which seems to correspond to the frame 22, has the plurality of openings on which the plurality of deposition masks are arranged respectively.

At line 1 on page 6 of the Official Action, the Examiner helpfully explains that the deposition masks (12a – 12d) (the stitched deposition mask 12) are retained to the base plate by engaging units, such as screw (Column 3, lines 17 – 26), in a disengageable manner (Column 2, lines 31 – 38). However, the Applicants respectfully submit that this is not correct. The deposition masks (12a – 12d) (the stitched deposition mask 12) are not retained to the base plate (the frame 22) by engaging units, such as screws which are inserted into the holes 15 provided in the plate 20. The screws are not shown and, instead, the holes 15 are shown in Fig. 1 of Clark and it seems that the numbering 20 is omitted therein. The screws do not engage units to retain the deposition masks (12a – 12d). The screws fasten the plate 20 to the base 14 through the holes 15. This is clear from the description in Column 3, lines 17 – 20 of Clark.

The Examiner also helpfully points out a disengageable manner by quoting Column 2, lines 31 – 38 of Clark. It is clear from the quoted portion that the mask sections are attached to each other using a removable adhesive and will be mounted to a frame. The engaging units comprising the removable adhesive engage the mask sections to each other and do not engage each of the mask sections to the frame 22 (which corresponds to the base plate in Claim 12).

In contrast, in Claim 12, a plurality of engaging units is provided on the base plate which corresponds to the frame 22 in Clark, and the relative position between the base plate and each of the deposition masks is adjusted respectively by retaining and moving each of the deposition masks relative to the base plate, and further after that each of the deposition masks on the base plate is retained by the engaging units.

By way of summary, the Applicants submit that the disclosure of Clark is:

(1) The frame 22 corresponds to the base plate in Claim 12. The frame 22 has only one opening 22 for the stitched mask 12 comprising the plurality of mask segments 12a – 12d. This construction is in contrast to the base plate of Claim 12, which has the plurality of openings on which the plurality of deposition masks is arranged respectively.

(2) Clark discloses means for securing the mask segments 12a – 12d to each other. The segments are only secured to each other and not to the frame 22. This construction is in contrast to the combination of the plurality of deposition masks and the base plate in Claim 12. In Claim 12, the base plate has the plurality of engaging units for engaging and disengaging each of the deposition masks and the relative position between the base plate and each of the deposition masks is adjusted by retaining and moving each of the deposition masks relative to the base plate.

(3) Clark discloses that after the deposition mask 12 has been assembled and mounted on the frame 22 using alignment device 10, the transparent flat plate 28 is removed. Further, the assembled deposition mask 12 and frame 22 are removed from the base 14 having the plate 20. Further, it is assembled deposition mask 12 and frame 22 that are placed in a chamber (not shown). It is clear that, in the alignment device disclosed in Clark, the base 14 for supporting the frame 22, the plate 20 for supporting the mask segments 12a – 12d, which is secured to the base

14 and the transparent flat plate, are needed to align the plurality of mask segments 12a – 12d to each other for forming the deposition mask 12. It is, therefore, necessary to bring the assembled deposition mask 12 and frame 22 back to the alignment device and put the assembled deposition mask 12 and frame 22 on the base 14 and plate 20 and further place the transparent flat plate 28 on the upper surface of the deposition mask 12 for changing or repairing at least one of the mask segments 12a – 12d. This alignment process is in contrast to the alignment process in Claim 12. In Claim 12, changing or repairing of at least one of the deposition masks is prosecuted only between the base plate and each of the deposition masks by using the engaging units provided on the base plate and the alignment marks formed on the base plate and each of the deposition masks.

As a result, the Applicants respectfully submit that Clark does not teach or suggest at least the features pointed in items (1) through (3) above. Further, the Applicants respectfully submit that the above features of Claim 12 are also not taught or suggested in Tang and Duggal. The Applicants therefore respectfully submit that hypothetically combining Tang and Duggal with Clark would still fail to teach or suggest the subject matter of Claim 12.

The Applicants acknowledge the rejection of Claim 7 under 35 U.S.C. §103 over the hypothetical combination of Nagayama with Tang, Duggal and Clark. That rejection is, of course, moot in view of the cancellation of Claim 7. However, with respect to Claim 13, the Applicants respectfully submit that Claim 13 is allowable for the same reasons set forth above with respect to Claim 12. As noted above with respect to Claim 12, Clark utterly fails to teach or suggest the subject matter of that claim. Further hypothetically combining Nagayama with the other references would fail to cure the deficiencies of the primary and secondary references. Thus, the Applicants respectfully submit that Claim 13 is in condition for allowance.

The Applicants acknowledge the rejection of Claims 5 – 6 and 8 under 35 U.S.C. §103 over the hypothetical combination of Tang and Duggal with Boudreau. That rejection is moot in view of the cancellation of those claims. In any event, the Applicants respectfully submit that Claim 11, 12 and 14 are allowable over that hypothetical combination. In that regard, the Examiner helpfully explains at line 1 on page 8 of the Official Action that the base plate of Boudreau comprises alignment features with indication of holes (21). However, this is not correct. This is because the holes 21 provided in the mask assembly 20 are for mounting the mask assembly 20 to the mask frame pins 17 provided on the mask frame 14. This structure is explained in Column 4, lines 17 – 29 of Boudreau. The pins 17 and the holes 21 have no function for aligning the apertured mask 22 with the substrate 32.

In the alignment apparatus 10 of Boudreau, as explained in Column 2, lines 54 – 68, the alignment is achieved by the combination of the primary datum pins 28 affixed to the mask holder assembly 12 and protruding from the side of the mask holder assembly 12, the primary datum apertures 34 provided in the substrate carrier 30, that engage with the primary pins 28 of the mask holder assembly 12, which are disposed on the periphery of the carrier 30, the secondary datum pins 36 protruding from the substrate carrier 30, and the mask alignment apertures 24 provided in the mask assembly 20. As explained in Column 5, lines 7 – 10 of Boudreau, the mask alignment apertures 24 of the mask assembly 20 include a hole and slot that engage the secondary datum pins 36 of the substrate carrier 30. In Column 5, lines 39 – 44, it is further explained that Boudreau discovered that the mask design allows enough forced movement of apertured mask 22 about its primary datum reference location through a crude series of chained datums, that a secondary independent datum can be used to make a more precise final registration of apertured mask 22. Further, in Column 7, lines 13 – 16, it is

explained that this type of registration or alignment system is that it is self-aligning and requires no expensive electro-optical sensing to align the patterns.

The basic concept for aligning the mask assembly 20 with the substrate 32 in the alignment apparatus 10 of Boudreau, as explained in Column 7, lines 1 – 6, the basic operation comprises prealignment with a primary datum (i.e., pins 28 and apertures 34) and realignment with a more precise secondary datum (i.e., pins 36 and apertures 24) and further engagement of the mask assembly. One set of the primary datum and the secondary datum is provided with respect to one set of the mask assembly 20, for example, the left side mask assembly 20 and the substrate 32, for example, the left side substrate 32. Another set of the primary datum and the secondary datum is also provided with respect to another set of the mask assembly 20, for example, the right side mask assembly 20 and the substrate 32, for example, the right side substrate 32. Both sets of the primary datum and the secondary datum are provided in parallel and independently each other.

This means that the alignment of the mask assembly 20 and the substrate 32 in the alignment apparatus 10 is prosecuted one by one on a plurality of series of the mask assembly 20 and the substrate 32.

This basic technical concept in the alignment disclosed in Boudreau is quite different from the basic technical concept in the alignment of Claims 11, 12 and 14. In sharp contrast, in Claims 11, 12 and 14, alignment of the plurality of deposition masks is prosecuted to the single substrate on which the plurality of organic EL devices is formed. For that, the base plate having the plurality of openings on which the deposition masks are arranged respectively is used. On the base plate, alignment of each of the deposition masks is performed with the alignment marks formed on the base plate and the deposition masks and after that each of the aligned deposition

masks is retained on the base plate with the plurality of engaging units provided on the base plate. Then, the base plate having the deposition masks is aligned with the single substrate with the alignment marks formed on the base plate and the single substrate. This basic technical concept in Claims 11, 12 and 14 is not taught or suggested by Boudreau.

Hypothetically combining Tang and Duggal with Boudreau fails to cure the deficiencies set forth above with respect to Boudreau. Both of Tang and Duggal do not provide additional disclosure that cures the deficiencies of Boudreau. Accordingly, the Applicants respectfully submit that Claims 11, 12 and 14 are allowable over that combination.

The Applicants acknowledge the rejection of Claim 7 over the hypothetical combination of Nagayama with Tang, Duggal and Boudreau. That rejection is moot in view of the cancellation of Claim 7. However, with respect to Claim 13, the Applicants respectfully submit that further hypothetically combining Nagayama with the secondary and primary reference fails to cure the deficiencies of that combination. Therefore, the Applicants respectfully submit that Claim 13 is also allowable.

The Applicants enclose an Information Disclosure Statement including publications cited in a European Search Report in a corresponding application. Entry into the Official File and consideration on the merits is respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire Application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,



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